NOS 01

Installing and configuring domain controllers

Module Overview

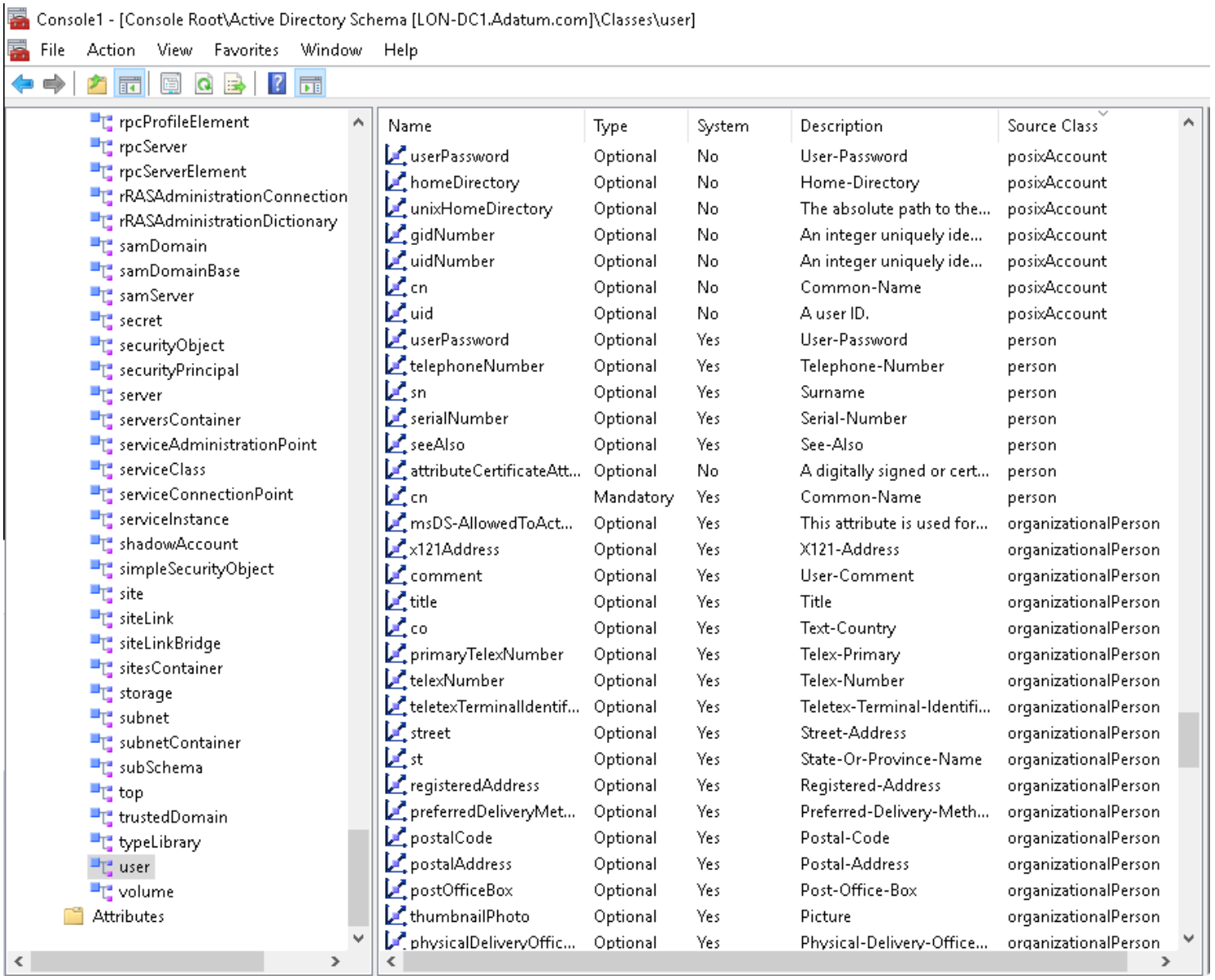
- Overview of AD DS
- Overview of AD DS domain controllers
- Deploying a domain controller

Lesson 1: AD DS components

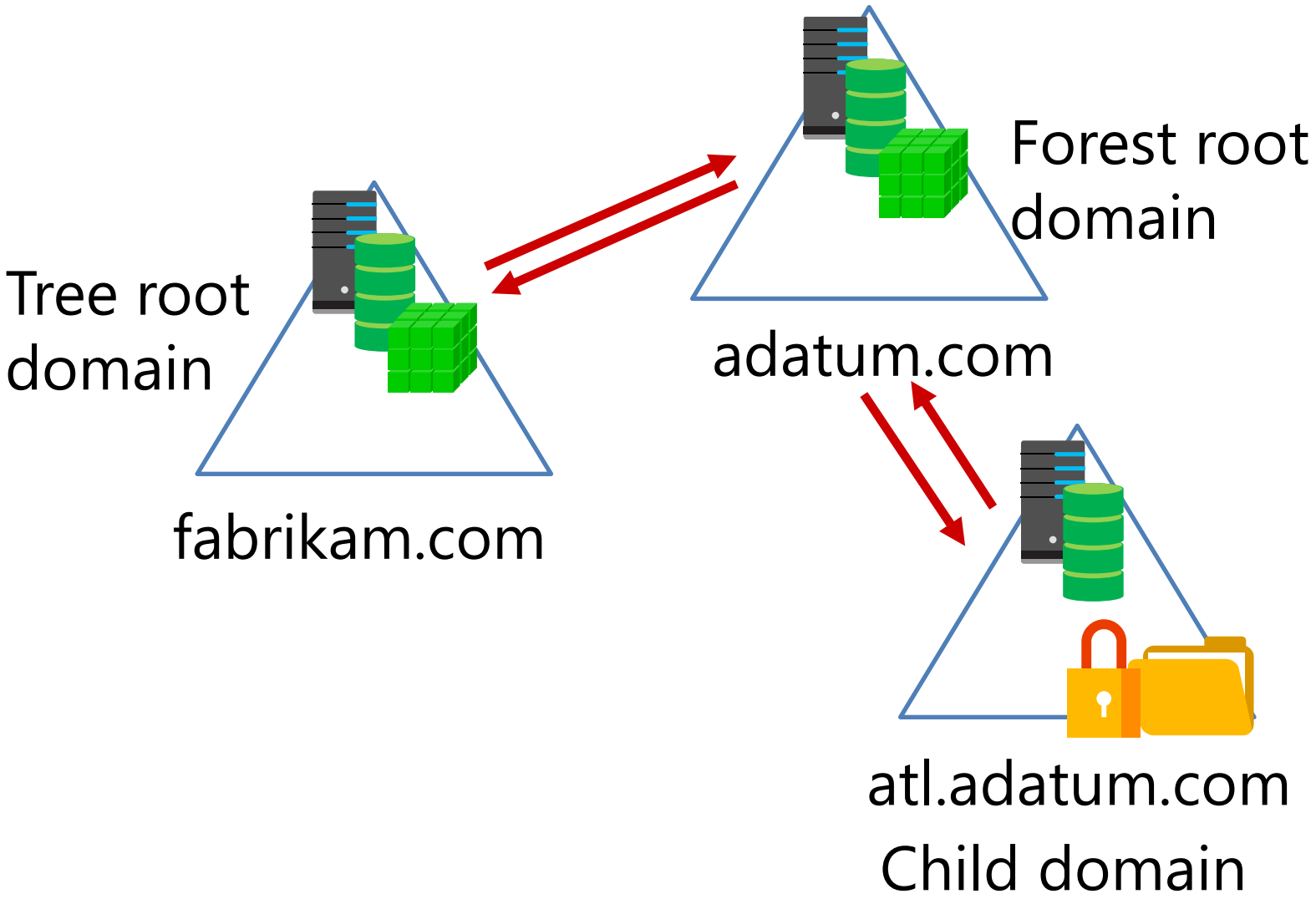
AD DS is composed of both logical and physical components

Logical components	Physical components
• Partitions • Schema • Domains • Domain trees • Forests • Sites • OUs • Containers	• Domain controllers • Data stores • Global catalog servers • RODCs

What is the AD DS schema?

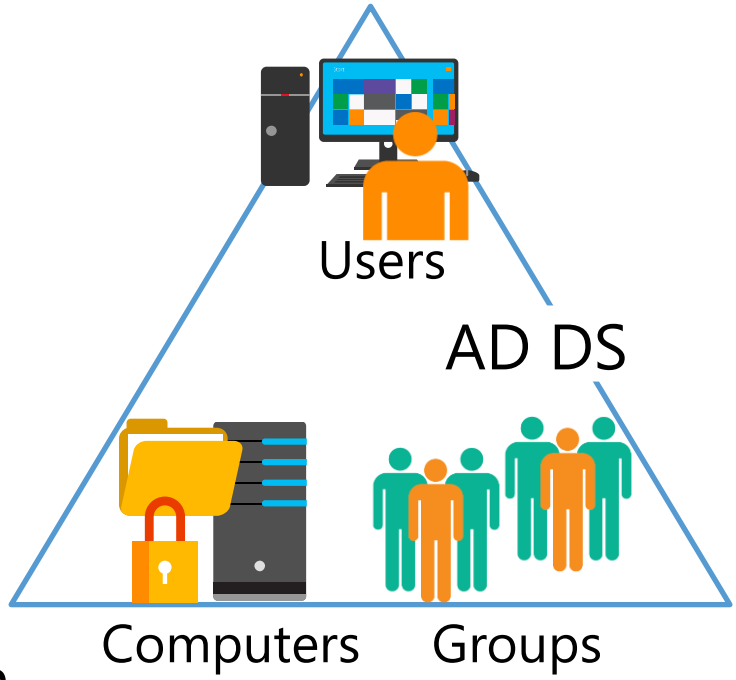


What is an AD DS forest?

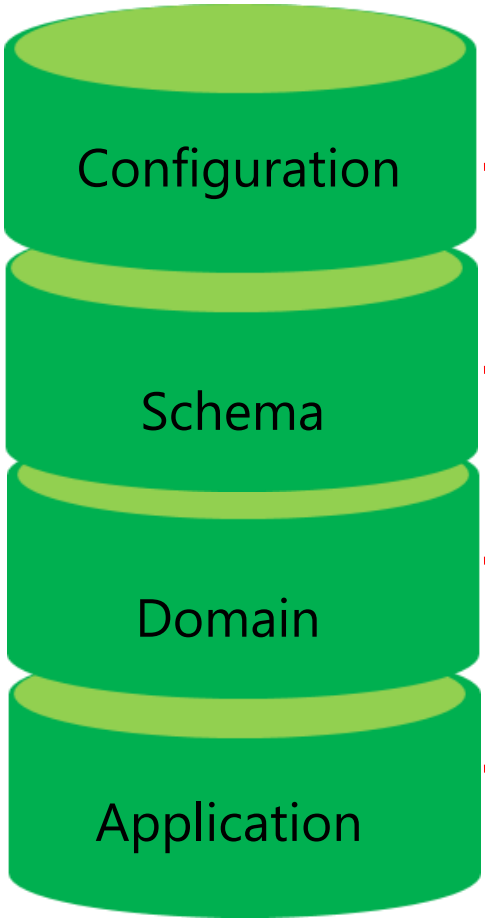


What is an AD DS domain?

- AD DS requires one or more domain controllers
- All domain controllers hold a copy of the domain database, which is continually synchronized
- The domain is the context within which user accounts, computer accounts, and groups are created
- The domain is a replication boundary
- The domain is an administrative center for configuring and managing objects
- Any domain controller can authenticate any sign-in anywhere in the domain
- The domain provides authorization



What are AD DS partitions?



Forest-wide information about the AD DS structure

Forest-wide definitions and rules for creating and manipulating objects and attributes

Information about domain-specific objects

Information about applications

AD DS database

What are OUs?

- Use containers to group objects within a domain:
  - You cannot apply GPOs to containers
  - Containers are used for system objects and as the default location for new objects
- Create OUs to:
  - Configure objects by assigning GPOs to them
  - Delegate administrative permissions

Overview of AD DS administration tools

You typically perform AD DS management by using the following tools:

- Active Directory Administrative Center
- Active Directory Users and Computers
- Active Directory Sites and Services
- Active Directory Domains and Trusts
- Active Directory Schema snap-in
- Active Directory module for Windows PowerShell

Lesson 2: Overview of AD DS domain controllers

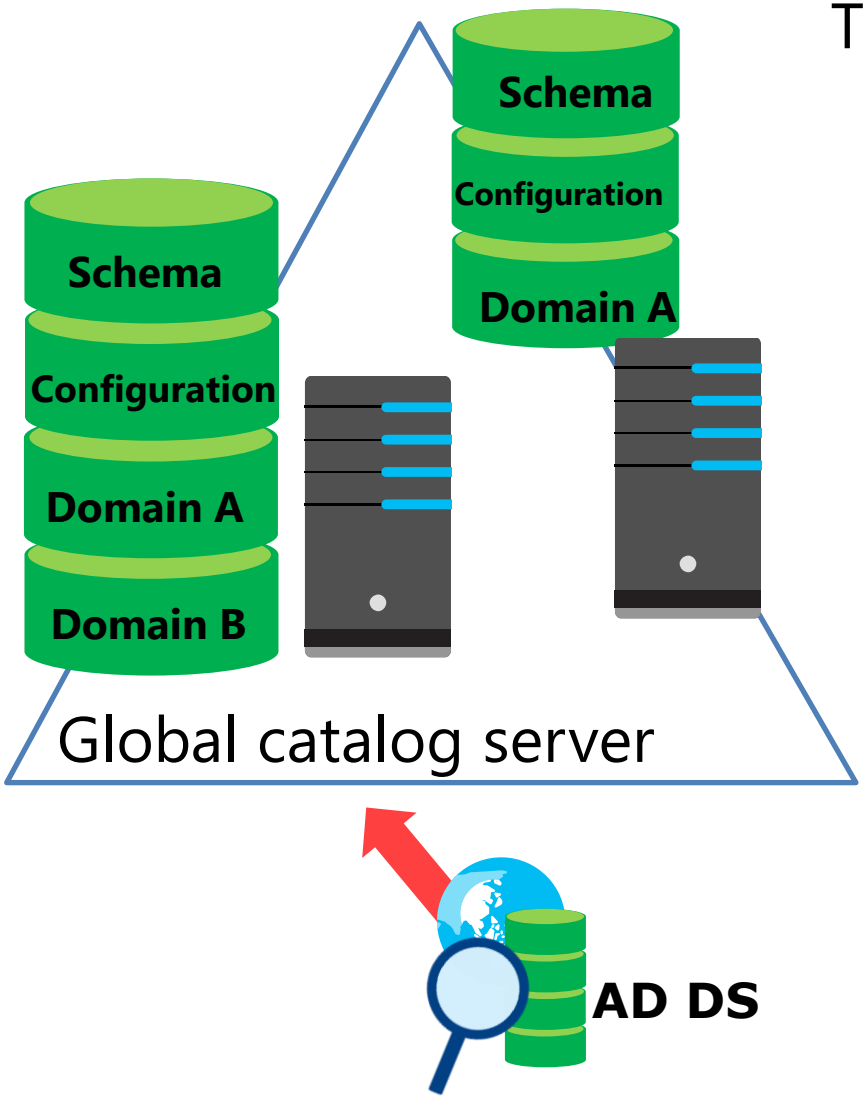
- What is a domain controller?
- What is a global catalog?
- Overview of domain controller SRV records
- Demonstration: Viewing the SRV records in DNS
- AD DS sign-in process
- What are operations masters?
- Transferring and seizing roles

What is a domain controller?

Domain controllers:

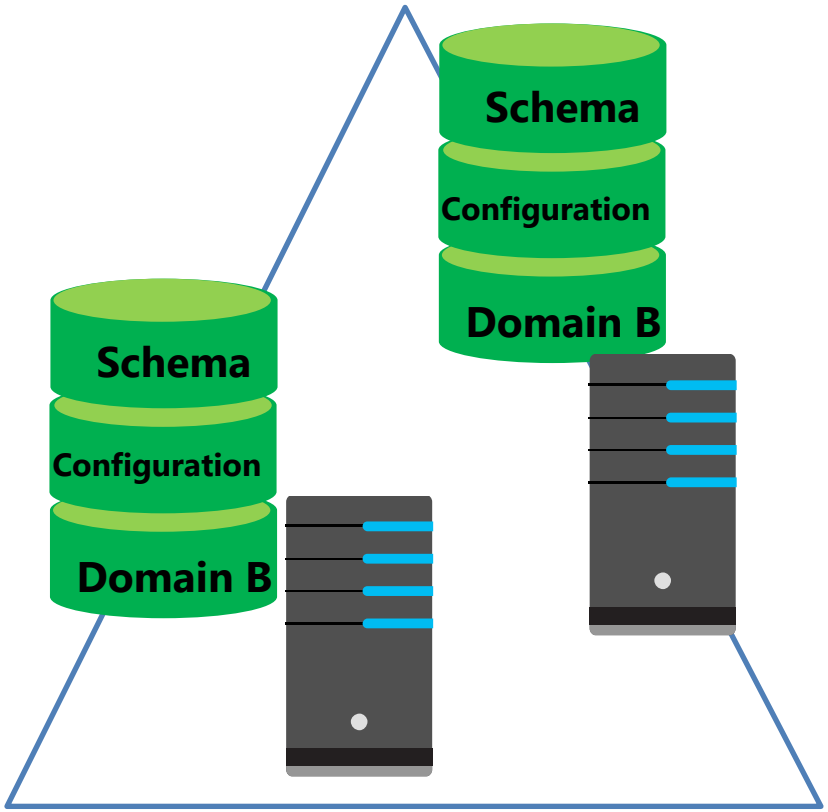
- Are servers that host the AD DS database (**Ntds.dit**) and **SYSVOL**
- Host the Kerberos authentication service and KDC services to perform authentication
- Have best practices for:
  - Availability:
    - Use at least two domain controllers in a domain
  - Security:
    - Use an RODC or BitLocker

What is a global catalog?



The global catalog:

- Hosts a partial attribute set for other domains in the forest
- Supports queries for objects throughout the forest

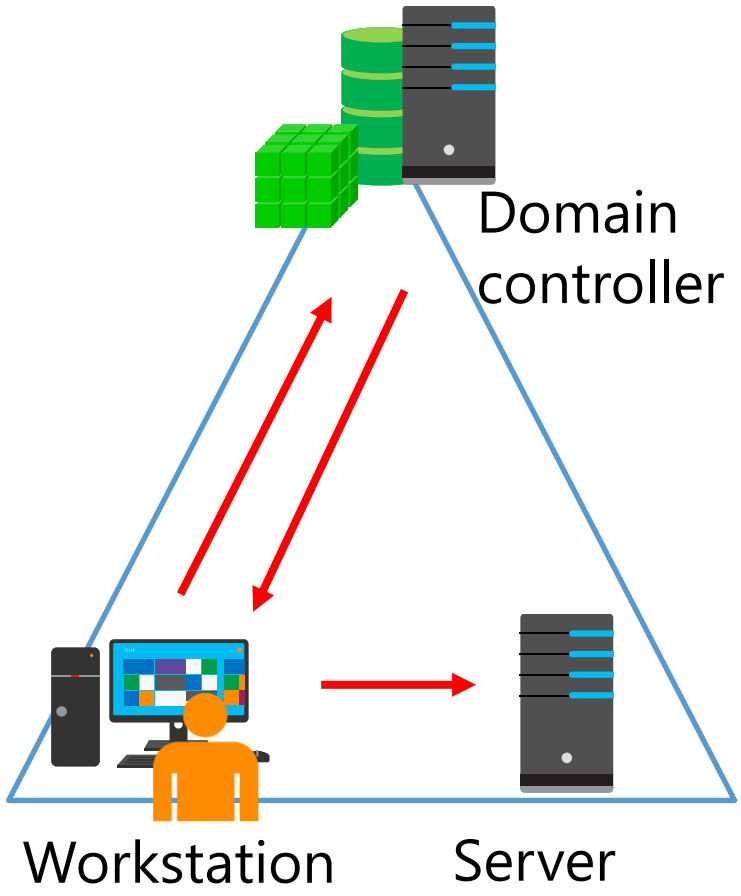


Overview of domain controller SRV records

- Clients find domain controllers through DNS lookup
- Domain controllers dynamically register their addresses with DNS
- The results of DNS queries for domain controllers are returned in this order:
  1. A list of domain controllers in the same site as the client
  2. A list of domain controllers in the next closest site, if none are available in the same site
  3. A random list of domain controllers in other sites, if no domain controller is available in the next closest site

AD DS sign-in process

1. The user account is authenticated to the domain controller
2. The domain controller returns a TGT back to client
3. The client uses the TGT to apply for access to the workstation
4. The domain controller grants access to the workstation
5. The client uses the TGT to apply for access to the server
6. The domain controller returns access to the server



What are operations masters?

- In the multimaster replication model, some operations must be single master operations
- Many terms are used for single master operations in AD DS, including:
  - Operations master (or operations master role)
  - Single master role
  - Flexible single master operations (FSMO)

The five FSMOs	
Forest: • Domain naming master • Schema master	Domain: • RID master • Infrastructure master • PDC emulator master

Transferring and seizing roles

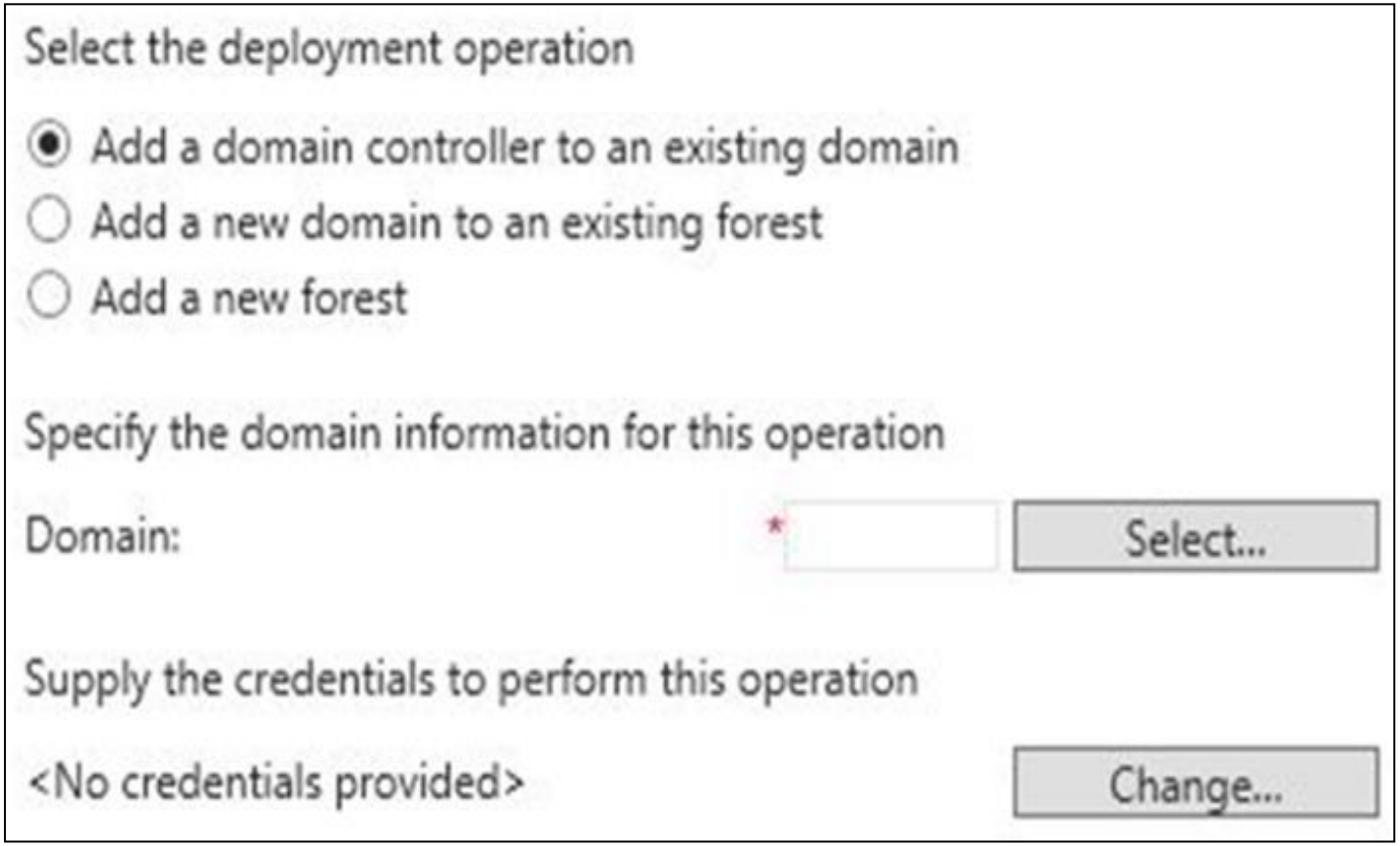
- Transferring is:
  - Planned
  - Done with the latest data
  - Done through snap-ins, Windows PowerShell, or ntdsutil.exe
- Seizing is:
  - Unplanned and a last resort
  - Done with incomplete or out-of-date data
  - Done through Windows PowerShell or ntdsutil.exe

Lesson 3: Deploying a domain controller

- Installing a domain controller from Server Manager

Installing a domain controller from Server Manager

The **Deployment Configuration** section of the **Active Directory Domain Services Configuration Wizard**



Overview of domain and forest boundaries in an AD DS structure

AD DS object	Boundary type
Domain	Domain partition replication
	Administrative permissions
	Group Policy application
	Auditing
	Password and account policies
	Domain DNS zone replication
Forest	Security
	Schema partition replication
	Configuration partition replication
	Global catalog replication
	Forest DNS zone replication

AD DS domain functional levels

New functionality requires that domain controllers are running a particular version of the Windows operating system:

- Windows Server 2003
- Windows Server 2008
- Windows Server 2008 R2
- Windows Server 2012
- Windows Server 2012 R2
- Windows Server 2016

- You cannot raise the functional level while domain controllers are running previous Windows Server versions

- You cannot add domain controllers that are running previous Windows Server versions after raising the functional level

Deploying new AD DS domains

- Forest root domain:
  - Is automatically created with a new forest
  - Is the base of an AD DS infrastructure
  - Can be the only domain in an AD DS deployment
- Child domain:
  - Is a child of a parent domain
  - Shares the same namespace with the parent domain
- Tree domain:
  - Creates a new domain tree and a new namespace
  - Are commonly used in merger and acquisition scenarios